Extron® Electronics
INTERFACING, SWITCHING AND DISTRIBUTION

# User's Guide




# *BBG 6 A and BBG 6 A J*

## Blackburst / Color Bars / Audio Generator

68-712-01 **Rev. D**
11 06


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# Precautions

## Safety Instructions • English

**This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.**

**This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.**

### Caution

**Read Instructions** • Read and understand all safety and operating instructions before using the equipment.

**Retain Instructions** • The safety instructions should be kept for future reference.

**Follow Warnings** • Follow all warnings and instructions marked on the equipment or in the user information.

**Avoid Attachments** • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

## Consignes de Sécurité • Français

**Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).**

**Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.**

### Attention

**Lire les instructions**• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

**Conserver les instructions**• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

**Respecter les avertissements** • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

**Eviter les pièces de fixation** • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

## Sicherheitsanleitungen • Deutsch

**Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.**

**Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.**

### Achtung

**Lesen der Anleitungen** • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

**Aufbewahren der Anleitungen** • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

**Befolgen der Warnhinweise** • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

**Keine Zusatzgeräte** • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

## Instrucciones de seguridad • Español

**Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.**

**Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.**

### Precaucion

**Leer las instrucciones** • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

**Conservar las instrucciones** • Conservar las instrucciones de seguridad para futura consulta.

**Obedecer las advertencias** • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

**Evitar el uso de accesorios** • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

### Warning

**Power sources** • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

**Power disconnection** • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

**Power cord protection** • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

**Servicing** • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

**Slots and openings** • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

**Lithium battery** • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

### Avertissement

**Alimentations**• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

**Déconnexion de l'alimentation**• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

**Protection du cordon d'alimentation** • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

**Réparation-maintenance** • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

**Fentes et orifices** • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

**Lithium Batterie** • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

### Vorsicht

**Stromquellen** • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

**Stromunterbrechung** • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

**Schutz des Netzkabels** • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

**Wartung** • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

**Schlitze und Öffnungen** • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

**Litium-Batterie** • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

### Advertencia

**Alimentación eléctrica** • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

**Desconexión de alimentación eléctrica** • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

**Protección del cables de alimentación** • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

**Reparaciones/mantenimiento** • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

**Ranuras y aberturas** • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

**Batería de litio** • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

# FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

# Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America, and Central America:**
Extron Electronics
1001 East Ball Road
Anaheim, CA 92805, USA

**Europe, Africa, and the Middle East:**
Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

**Asia:**
Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

**Japan:**
Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

***If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.***

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

# 安全须知 • 中文

**这个符号提示用户该设备用户手册中有重要的操作和维护说明。**

**这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。**

## 注意

**阅读说明书** • 用户使用该设备前必须阅读并理解所有安全和使用说明。

**保存说明书** • 用户应保存安全说明书以备将来使用。

**遵守警告** • 用户应遵守产品和用户指南上的所有安全和操作说明。

**避免追加** • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

## 警告

**电源** • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过。

**拔掉电源** • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

**电源线保护** • 妥善布线， 避免被踩踏，或重物挤压。

**维护** • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

**通风孔** • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

**锂电池** • 不正确的更换电池会有爆炸的危险。 必须使用与厂家推荐的相同或相近型号的电池。 按照生产厂的建议处理废弃电池。

# Introduction

The BBG 6 A and BBG 6 A J (an exclusively Japanese model) are compact, high performance blackburst, color bars, and audio generators.  Unless otherwise noted, the name **BBG 6 A** refers to both the standard (USA and European countries) and the Japanese models within this guide.

The BBG 6 A provides six broadcast quality blackburst signal outputs on BNC connectors, two of which can be changed to color bars with a DIP switch.  For the standard BBG 6 A, the user can select output signals as either NTSC or PAL.

The BBG 6 A J outputs NTSC only and has no setup pedestal in its video output.  Color bars are standard SMPTE bars (NTSC) or full field (PAL).  The audio generator provides a single 1 kHz sine wave audio tone, either balanced or unbalanced, with a selectable output level of either +4 dBu (pro) or -10 dBV (consumer).

The BBG 6 A is a member of the VersaTools® line of basic distribution amplifiers, switchers, and video accessories.  The unit ships with an external, desktop 12 V power supply, which accepts 100-240 VAC input.

## Models

There are two available models of the BBG 6 A:

**BBG 6 A (NTSC and PAL signal)** — Handles NTSC and PAL signals.  This version is used in the USA and some other countries.

**BBG 6 A J (NTSC signal only)** — Handles NTSC signals only. This version is used in Japan.

Other than their differing signal options, these two models are identical.

# Installation

The BBG 6 A can be mounted on a rack shelf (VersaTools or universal), under a desk or tabletop, or on a projector bracket.

## Rack mounting

For optional rack mounting, mount the BBG 6 A on a VersaTools 19" 1U Rack Shelf (Extron part #**60-190-20** or #**60-604-20**) (figure 1) or a standard Universal 1U Rack Shelf (part #**60-190-01** or **60-604-01**) (figure 2).  On the standard rack shelf, the BBG 6 A mounts in one of four locations to the rear of the rack or in one of four locations to the front of the rack.

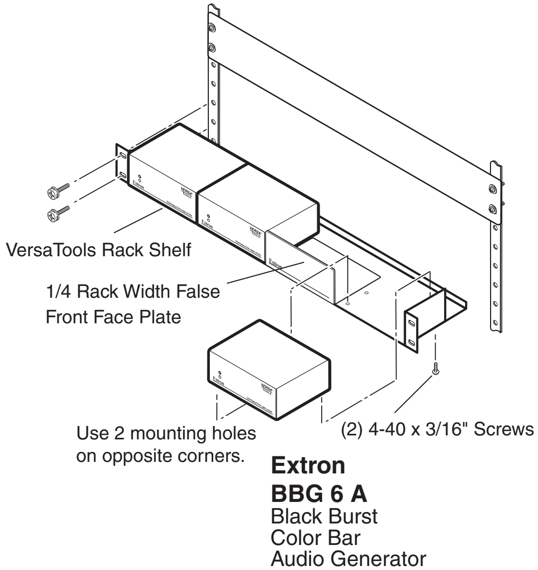



***Figure 1 — Rack mounting the BBG 6 A on a VersaTools shelf***

1. If rubber feet were previously installed on the bottom of the unit, remove them.
2. Mount the unit on the rack shelf, using two 4-40 x 3/16" screws in opposite (diagonal) corners to secure the BBG 6 A to the shelf.
3. Install blank panel(s) or other unit(s) to the rack shelf.
4. Insert the shelf into the rack, aligning the holes in the shelf with those of the rack.
5. Secure the shelf to the rack using the supplied machine screws. The VersaTools shelf can be mounted in the front or in the rear of the rack.



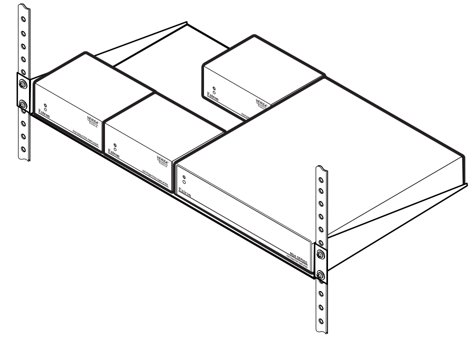


***Figure 2 — Mounting the BBG 6 A on a standard shelf***

## Furniture or projector mounting

Furniture mount or projector mount the unit using the optional mounting kit (part #**70-212-01** for furniture, or **70-217-04** for a projector) as follows:

1. If rubber feet were previously installed on the bottom of the unit, remove them.
2. Attach the mounting brackets to the BBG 6 A with the machine screws provided (figure 3).
3. **For furniture mounting**, hold the unit with the attached brackets against the underside of the table or other furniture. Mark the location of the screw holes of the bracket on the mounting surface.

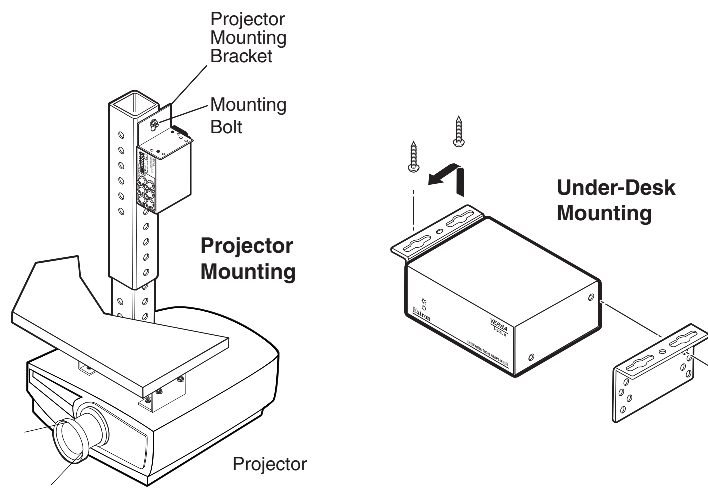



***Figure 3 — Desk and projector mounting the BBG 6 A***

4. **For furniture mounting**, drill 3/32" (2 mm) diameter pilot holes, 1/4" (6.3 mm) deep in the mounting surface at the marked screw locations.
5. **For furniture mounting**, insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until just less than 1/4" (6.3 mm) of the screw head protrudes.
6. **For furniture mounting**, align the mounting screws with the slots in the brackets and place the unit against the surface, with the screws through the bracket slots.
7. **For furniture mounting**, slide the unit slightly forward or back, then tighten all four screws to secure the unit in place.
8. **For projector mounting**, secure the unit to a projector mount or other surface by inserting the mounting bolt through the bracket's slotted hole.

## Connections, Indicators, and Controls

See figure 4 below.

① **Power/Signal indicator LED** — When illuminated, this LED indicates that the BBG 6 A is receiving power.

② **Blackburst only outputs** — Connect up to four display devices to these BNC connectors for blackburst output.

③ **Blackburst/color bars outputs** — Connect up to two display devices to these BNC connectors for blackburst or color bars output.

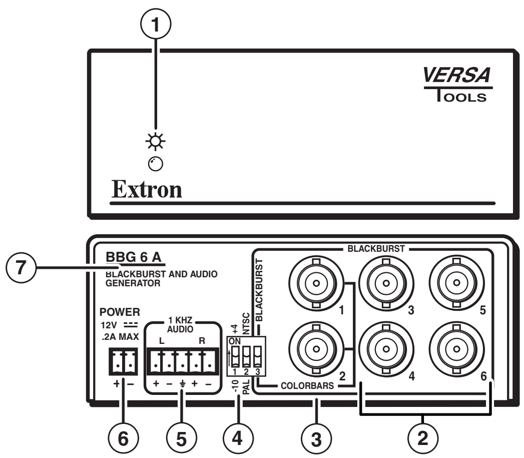



*Figure 4 — BBG 6 A front and rear panels*

④ **DIP switch** — Use these DIP switches to select between +4 dBu (pro) or -10 dBV (consumer) audio output level, between NTSC or PAL (USA only) output, and between blackburst or color bars for outputs 1 and 2.

**NOTE** *With the first DIP switch set to "+4," the unit outputs +4 dBu audio level with* balanced *wiring. With the DIP switch set to "-10," the unit outputs -10 dBV audio level with* unbalanced *wiring.*

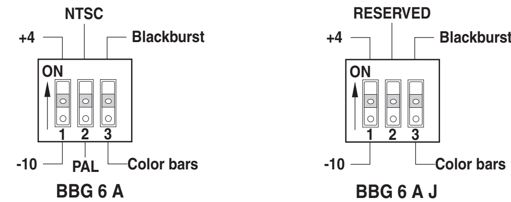



*Figure 5 — BBG 6 A and BBG 6 A J DIP switches*

**NOTE** *DIP switch 2 of the BBG A J is not used.*

**NOTE** *Please refer to the table below for other combinations.*

| Dip Switch Position \ Output | Balanced | Unbalanced |
|---|---|---|
| +4 | +4 dBu | -2 dBu |
| -10 | -4 dBV | -10 dBV |

⑤ **Audio output connector** — Insert a 3.5 mm, 5-pole captive screw connector into this connector for a balanced or unbalanced 1 kHz sine wave audio tone.

**NOTE** *Do not tin the stripped power supply leads before installing the captive screw connector. Tinned wires are not as secure in the captive screw connectors and could pull out.*

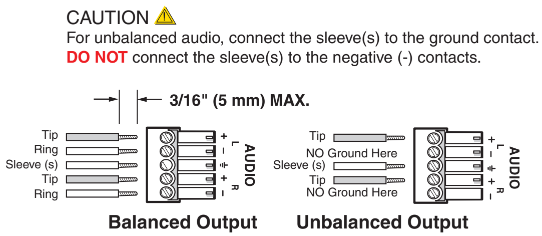



***Figure 6 — BBG 6 audio wiring***

⑥ **Power connector —** Plug the external 12 V power supply into this 2-pole captive screw connector. The power supply is included with the unit. Figure 7 shows how to wire the connector.

**CAUTION** *When connecting the power supply, voltage polarity is extremely important. Applying power with incorrect voltage polarity could damage the power supply and the BBG 6 A. Identify the power cord negative lead by the ridges on the side of the cord or the black heat shrink wrapping around it.*




***Figure 7 — Power connector wiring***

**NOTE** *Do not tin the stripped power supply leads before installing the captive screw connector. Tinned wires are not as secure in the captive screw connectors and could pull out.*

**WARNING** *The two power cord wires must be kept separate while the power supply is plugged in. Remove power before continuing.*



To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.

As an alternative, you can use an Extron P/S 100 Universal 12 VDC Power Supply (part **#60-357-01**), which can power up to ten BBG 6 As or other Extron 12 VDC devices using only one AC power connector.

⑦ **Version label** — Differentiates the standard (NTSC and PAL signals) versus Japanese (BBG 6 A J, NTSC signals only) versions of the BBG 6 A.

# Specifications

## Blackburst output

| | |
|---|---|
| Number/signal type | 6 blackburst (two can be switched to color bars) |
| Connectors | 6 BNC female |
| Standards | |
| BBG 6 A | RS-170A standard for NTSC 3.58, CCIR 624-4 standard for PAL |
| BBG 6 A J | RS-170A standard for NTSC 3.58 |
| Impedance | 75 ohms |
| Sync level | |
| BBG 6 A | 40 IRE for NTSC, 43 IRE for PAL |
| BBG 6 A J | 40 IRE for NTSC |
| Color burst level | |
| BBG 6 A | 40 IRE for NTSC, 43 IRE for PAL |
| BBG 6 A J | 40 IRE for NTSC |
| Setup level | |
| BBG 6 A | 7.5 IRE (NTSC) or 0 IRE (PAL) |
| BBG 6 A J | 0 IRE (NTSC) |
| Tolerance for all levels | ±3% |
| Subcarrier levels | |
| BBG 6 A | NTSC 3.579545 ±3 Hz<br>PAL 4.433618 ±3 Hz |
| BBG 6 A J | NTSC 3.579545 ±3 Hz |

# Specifications, Part Numbers, and Accessories

## Color Bars output

| | |
|---|---|
| Number/signal type | |
| BBG 6 A | 2 color bars, switchable, standard SMPTE bars for NTSC, full field 8-bar for PAL |
| BBG 6 A J | Standard SMPTE bars for NTSC |
| Connectors | 2 BNC female |
| Standards | |
| BBG 6 A | NTSC 3.58, PAL |
| BBG 6 A J | NTSC 3.58 |
| Impedance | 75 ohms |
| Sync level | |
| BBG 6 A | 40 IRE for NTSC, 43 IRE for PAL |
| BBG 6 A J | 40 IRE for NTSC |
| Color burst level | |
| BBG 6 A | 40 IRE for NTSC, 43 IRE for PAL |
| BBG 6 A J | 40 IRE for NTSC |
| Setup level | |
| BBG 6 A | NTSC, 7.5 IRE; PAL, 0 IRE |
| BBG 6 A J | NTSC, 0 IRE |
| White level | 100 IRE |
| Tolerance for all levels | ±3% |
| Subcarrier levels | |
| BBG 6 A | NTSC 3.579545 ±3 Hz, PAL 4.433618 ±3 Hz |
| BBG 6 A J | NTSC 3.579545 ±3 Hz, no setup pedestal |

## Audio output

| | |
|---|---|
| Number/signal type | 1 set (L and R) of stereo sine waves, balanced or unbalanced |
| Connectors | (1) 3.5 mm captive screw connector, 5 pole |
| Impedance | 50 ohms unbalanced, 100 ohms balanced |
| Signal level | Selectable: professional level, +4 dBu (1.23 V) balanced; or consumer level, -10 dBV (316 mV) unbalanced |
| THD | 0.1% |
| Tolerance for all levels | ±3% |
| Signal frequency | 1 kHz |

**NOTE** *0 dBu = 0.775 V, 0 dBV = 1 V, 0 dBV≈ 2 dBu.*

## General

| | |
|---|---|
| External power supply | 100 VAC to 240 VAC, 50/60 Hz, 2.5 watts, external, autoswitchable; to 12 VDC, 1 A, regulated power supply |
| Power input requirements | 12 VDC, 0.2 A (max.) |
| Temperature/humidity | Storage: -40 to +158 °F (-40 t +70 °C) / 10% to 90%, noncondensing<br>Operating: +32 to +122 °F (0° to +50 °C) / 10% to 90%, noncondensing |
| Rack mount | Yes, with optional 1U VersaTools® 3" deep rack shelf, part #60-190-20 (RSF 123) or 60-604-20 (RSB 123); or Universal 9.5" deep rack shelf, part #60-190-01 (RSU 129) or 60-604-01 (RSB 129). Also under-desk mountable with optional MBU 123 kit part #70-212-01. |
| Enclosure type | Metal |
| Enclosure dimensions | 1.7" H x 4.3" W x 3.0" D (1U high, quarter rack wide)<br>4.3 cm H x 10.9 cm W x 7.6 cm D (Depth excludes connectors.) |
| Product weight | 0.4 lbs (0.2 kg) |
| Shipping weight | 3 lbs (2 kg) |
| Vibration | ISTA 1A in carton (International Safe Transit Association) |
| Listings | UL, CUL |
| Compliances | CE, FCC Class A, VCCI, AS/NZS, ICES |
| MTBF | 30,000 hours |
| Warranty | 3 years parts and labor |

**NOTE** *All nominal levels are at ±10%.*

**NOTE** *Specifications are subject to change without notice.*